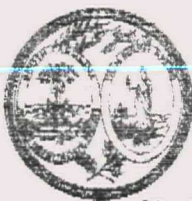


South Carolina Department of Health  
and Environmental Control

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2700 Bull Street  
Columbia, S.C. 29201

Commissioner  
Michael D. Jarrett



April 20, 1988

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Mr. Jon K. Bornholm  
Superfund Project Manager  
US EPA, Region IV  
345 Courtland Street  
Atlanta, Georgia 30365

RE: Draft RI/FS Work Plan/Medley Farm Site  
Cherokee County

Dear Mr. Bornholm:

The Draft RI/FS Work Plan for the Medley Farm Site has been reviewed by the Department. The following details the major concerns from my office and the Division of Hydrogeology.

GENERAL

Changes are needed in well and well sampling locations, test pit location and well construction.

1.0 INTRODUCTION

No comment.

2.0 SITE OVERVIEW

2.1.2 Hydrogeology

\* This section mentions that two wells were drilled on the Medley Site in 1984, and the locations of these wells need to be shown. It was assumed that, because one well was dry and the other had water at sixty-five feet, the major volume of ground-water flow away from the site is within the bedrock aquifer. No data on productivity of bedrock wells was given to support this conclusion, and the use of two wells to characterize an entire site is unsupportable. Additionally, it is known that the bedrock aquifers are most often recharged by the saprolite aquifers, as stated in the report. Therefore, the majority of the water in the bedrock had to flow through the saprolite. Documentation of flow directions is needed in both the shallow and deeper aquifers. It is also stated that information will be "developed" to evaluate if Jones Creek, the Big Blue Branch, or Thickety Creek act as ground-water flow divides. ~~The proposal needs to state how this is to be done.~~ There are not enough proposed well pairs near the streams to be able to prove whether or not the streams are flow divides. Also, as contamination has likely migrated through bedrock fractures; which

\*



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may not necessarily pass through the streams or which may pass under a stream; considering the effects of streams may not be helpful in predicting paths of contamination.

### \*\*\* 2.3 SITE INVESTIGATIONS AND REMEDIATION

This section mentions the results of the electromagnetism survey completed by NUS in 1983, stating that contaminants may have migrated to the southeast, and showing, in Figure 2.2, anomalous zones. The use of electromagnetic equipment in the Piedmont area is questionable due to its sensitivity to metallic minerals such as pyrite and magnetite, commonly associated with metamorphic rocks, and due to its sensitivity to bedrock topography which is not well controlled for in the study. The results of the EM study should be considered as possibilities rather than probabilities.

Also, Figure 2.2 does not show Area C or Area E as is stated in the narrative. It would be helpful to locate the proposed well locations on Figure 2.2. Figure 2.2 would be better expanded.

For comparison purposes, Table 2.1 should include relative concentrations of similar parameters in the soils.

### 3.0 REMEDIAL INVESTIGATION TECHNICAL APPROACH

#### \*\*\* 3.1 SURVEY AND SITE MAP PREPARATION

The location of the proposed topographic map will include the site and the area on the south and east of the site because "ground-water flow is to the south and east", according to this section. There is no data to support this conclusion, especially considering that the Sprouse well, which is northwest of the site, is known to be contaminated. Some ground-water flow must be in this direction, and a topographic map ~~should~~ needs to include the northwest area around the site.

#### 3.2.1 ~~Receptor and Transport Pathway Identification~~

~~This section mentions receptors "will be identified based on conceptualization of potential off-site transport pathways". This "conceptualization" appears to have already taken place, and it is not altogether correct.~~

#### \*\*\* 3.2.2 Fracture Tract Analysis

Fracture tract analysis, mentioned in this section will be done before monitoring wells are drilled and will be used to "refine" locations. DHEC personnel in the Bureau of Solid and Hazardous Waste Management, should be notified of the final planned well locations, and approval of well construction should be granted prior to the commencement of drilling.



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# 3.6.1 Soil Gas Survey

Major concerns are expressed in regards to this survey. Several questions arose as review of this part of the plan occurred. Before this portion can adequately be reviewed, the depth of the carbon collectors needs to be determined and the rationale for this determination. Also, the time period the collector is to be left in the soil needs to be addressed and supported. Will the ion count flux data be associated with concentration of VOC in parts per million or mg/kg. Is this to determine or be associated with ground water contamination or soil contamination or both?

## 3.6.2 Test Pits

This section indicates that test pits will be excavated "in and around the former lagoon and drum storage areas". The plans are to dig pits only in the lagoons; this completely overlooks the drum areas. It has been mentioned elsewhere that suspected areas of drum burial may be subjected to a soil boring in Phase II, but it may be difficult to core through buried drums. It is recommended that at least five pits be dug in areas of past drum storage and suspected drum storage. In general, test pits should not be done until soil gas survey results are in, for safety reasons, so that extra precautions may be taken in more hazardous areas. Plans should be made for the dimensions of the pits and for how they will be backfilled.

### 3.6.3 Monitoring Well Installation

This section indicates that four well pairs are planned. Detailed construction details must be submitted, and wells must be drilled by a South Carolina certified well driller. Rationale for the location of MW-1 is that it is supposedly upgradient. However, the proposed location of MW-1 is between the site and a contaminated well along a fracture trace; therefore, it may not be upgradient. Other upgradient locations should be proposed. MW-2 is supposed to be immediately downgradient of the site, but the most contaminated part of the phase may have passed the proposed well location as the majority of the source of contamination was removed in 1983. Yet this is the only well ~~which sampling is proposed in Phase I.~~ MW-3 and MW-4 are supposed to be located on fracture traces; however, a map needs to be given which indicates the location of the fracture traces. The source of information that was used is not referenced. However, maps supplied in the 1983 report of HRS indicate one location where fractures cross on the Medley Farm site. This would be an excellent location for a fifth well pair, which may be needed in order to completely describe the complicated ground-water flow paths on site.

Split spoon samples should be taken from all borings and described for each five foot interval. The description should be done by a qualified geologist, and the results should be used in conjunction with soil boring information to draw several cross sections of the Medley Farm Site.



It is stated that bedrock wells will be completed twenty feet below ground-water. Provisions need to be made for failure to encounter ground-water which is a common occurrence in the Piedmont.

Well construction details in this section are not sufficient to approve well construction, and the location of the screens is unacceptable. The plans are to set the screen so that it is located five feet above the water table to ten feet below the table. Subsequently, slug tests are proposed, and a slug test in any well with five feet of screen above the water table will yield results that cannot be used. The screen must be set at least five feet below the water table to insure accurate slug tests. Drawings showing construction details of stainless steel wells are needed.

#### 3.6.4 Ground Water Sampling

This section plans for sampling of well water in Phase I of one pair. To better address the type and extent of contamination in a very simple way, all wells should be sampled and the water analyzed with a volatile organic scan.

#### 3.6.5 Chemical Analysis

Procedures for compositing the soil samples from the split spoon samples needs to be provided. The rationale for "not" collecting all samples at the same time from already installed wells is not given. It is unclear what can be gained by waiting to sample the remaining three (3) well (6 wells) until Phase II.

#### 3.7.1 Soil Borings

"Soil Fringe" in heading should be underlined. Procedures for cleaning the sampler needs to be provided. Also details on duplication procedures for the split spoon is necessary for evaluation. A definition of appreciable in regards to contamination needs to be defined. It is possible that high levels of contamination have migrated past the fifteen foot mark and down to the twenty-five foot level. Therefore, it is not reasonable to discard the twenty-five foot sample. An organic vapor analyzer (OVA) is helpful in detecting volatiles but not in determining a soil sample clean or to have no appreciable contamination. PCB's, dioxins, and heavy metals will not register on an OVA.

#### 3.7.4 Hydraulic Testing

Hydraulic testing should be done only if the well screens are appropriately set. To better characterize the ground-water flow around the Madley Farm Site, pump tests should be run on all well pairs. In a site with so many diverse fracture patterns and variable topography, all possible information should be gathered at all wells. It very well may be that the aquifers are connected in some locations and not connected in others. Location of the discharge of generated water and how it is to be treated should be delineated.

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~~3.7.5~~ Ground Sampling

The Sprouse well should be sampled regardless. No construction costs are associated with this well and it is easily accessible.

~~3.7.6.~~ Chemical Analysis

The basis for parameter selection for inclusion on the list(s) of indicator parameters should be given.

~~3.9~~ WATER LEVEL MEASUREMENT AND STREAM GAUGING

This section indicates that stations will be monitored up and downgradient in Jones Creek. On all maps in the RI/FS Work Plan stream locations should be clearly delineated and labeled. How often will the gauges be used? Is this Phase I, Phase II, or both?

~~3.10.1~~ Decontamination of Equipment

The drill rigs and excavating equipment should be clean of residual soils and oil/grease from previous work prior to arrival on site.

~~3.10.2~~ Decontamination Areas

The decon area should be relatively clean and upgradient of the grossly contaminated areas.

~~4.0~~ FEASIBILITY STUDY TECHNICAL APPROACH

No Comment

~~5.0~~ PROJECT MANAGEMENT

No Comment

~~6.0~~ RI/FS SCHEDULE

Time zero shall occur upon written approval of the RI/FS Work Plan received from US EPA, Region and not be contingent upon consultant selection by the Steering Committee.

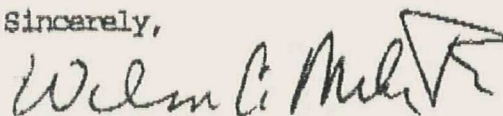
Many adjustments are needed in the proposed RI/FS for the Madley Farm site.

Mr. Jon K. Bornholm  
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Please inform me of upcoming meetings concerning the Work Plan, especially those involved with the Steering Committee. If this office can be of further assistance, please contact me.

Sincerely,



Wilson C. Miles, Jr.  
Site Engineering Section  
Bureau of Solid and Hazardous  
Waste Management

WCMjr:elf